

TOSHIBA BI-DIRECTIONAL TRIODE THYRISTOR SILICON PLANAR TYPE

## SM12G45, SM12J45, SM12G45A, SM12J45A

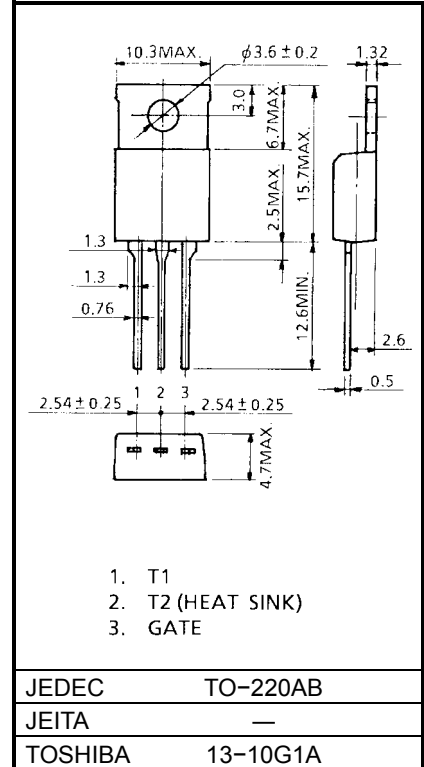
### AC POWER CONTROL APPLICATIONS

- Repetitive Peak Off-State Voltage :  $V_{DRM} = 400, 600V$
- R.M.S On-State Current :  $I_T (RMS) = 12A$
- High Commutating ( $dv / dt$ )

### MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage	SM12G45 SM12G45A	400	V
	SM12J45 SM12J45A	600	
R.M.S On-State Current (Full Sine Waveform $T_c = 98^\circ C$ )	$I_T (RMS)$	12	A
Peak One Cycle Surge On-State Current (Non-Repetitive)	$I_{TSM}$	120 (50Hz)	A
		132 (60Hz)	
$I^2 t$ Limit Value ( $t = 1\sim 10ms$ )	$I^2 t$	72	$A^2 s$
Critical Rate of Rise of On-State Current	$di / dt$	50	$A / \mu s$
Peak Gate Power Dissipation	$P_{GM}$	5	W
Average Gate Power Dissipation	$P_G (AV)$	0.5	W
Peak Gate Voltage	$V_{GM}$	10	V
Peak Gate Current	$I_{GM}$	2	A
Junction Temperature	$T_j$	-40~125	$^\circ C$
Storage Temperature Range	$T_{stg}$	-40~125	$^\circ C$

Unit: mm

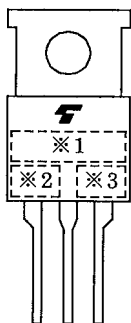


Weight: 2.0g

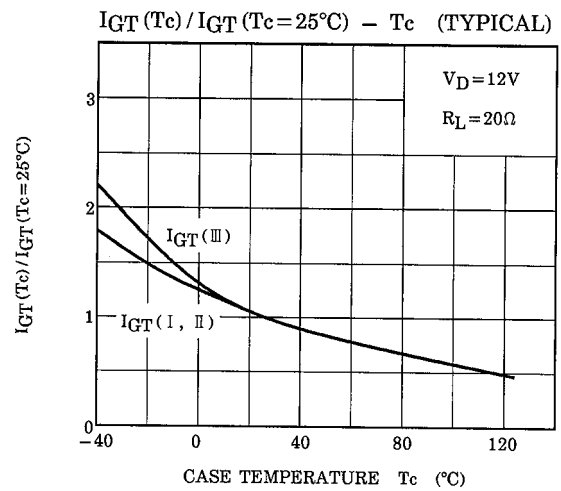
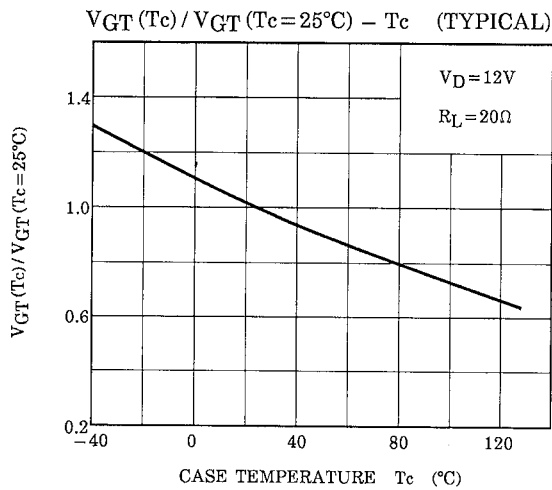
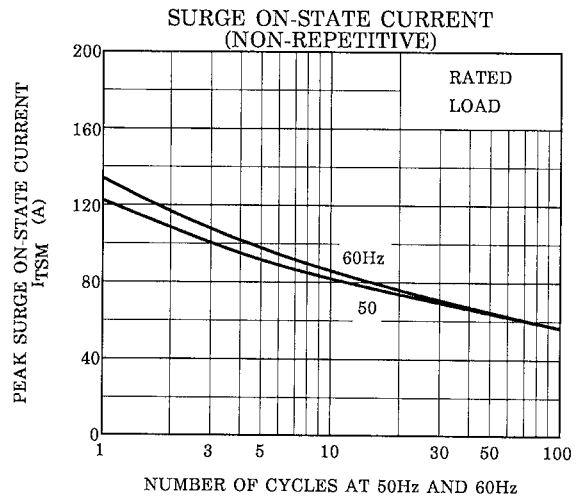
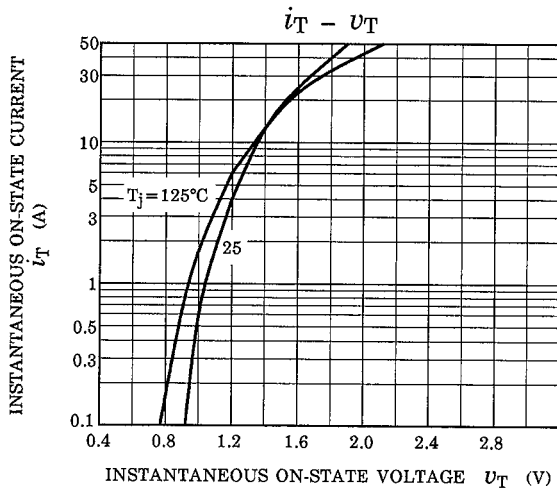
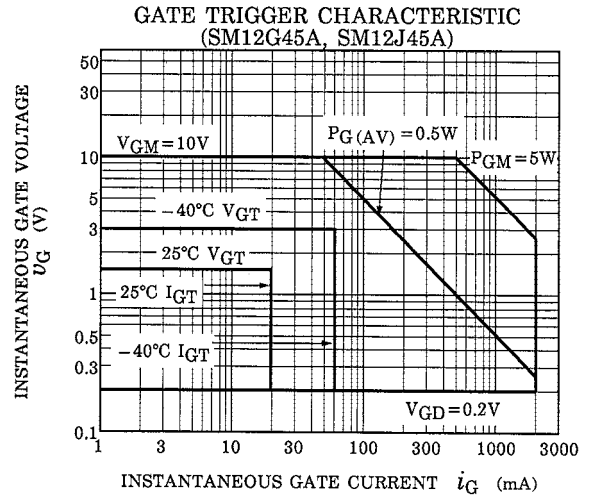
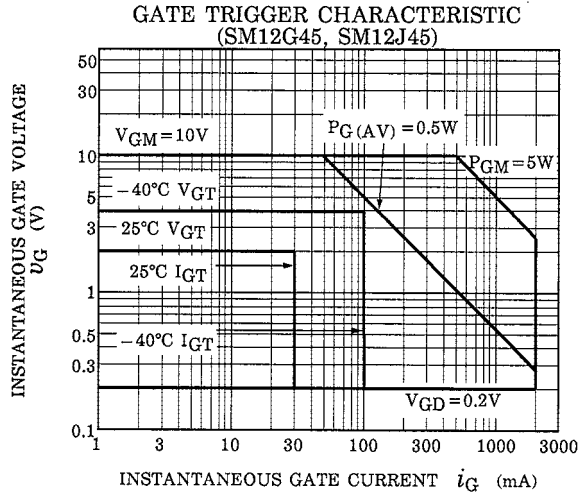
## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

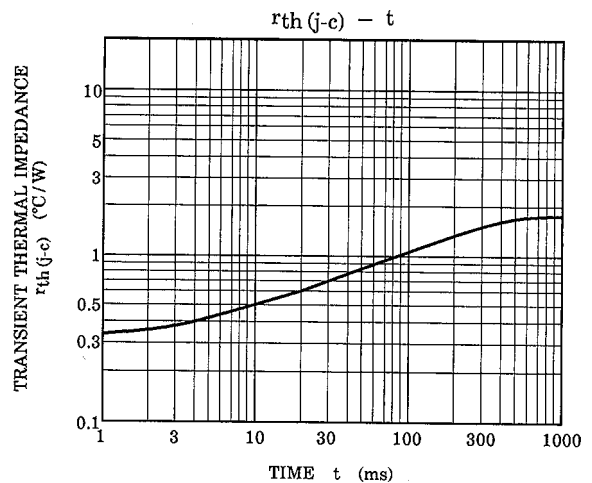
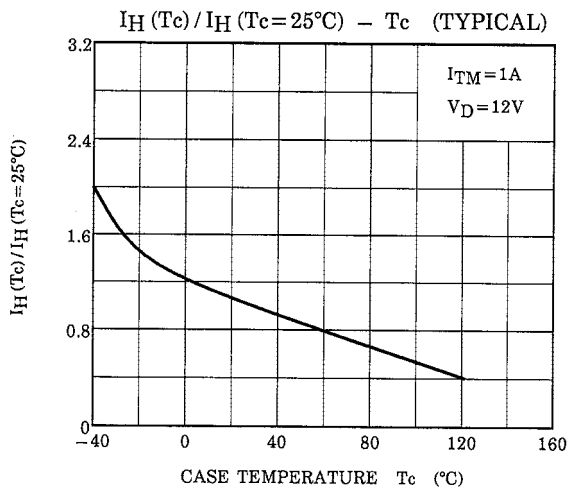
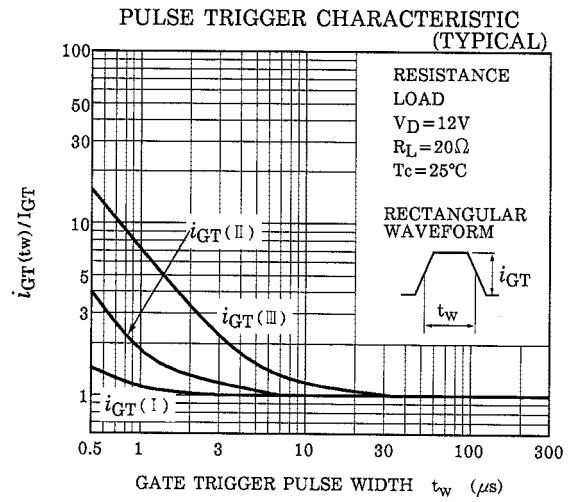
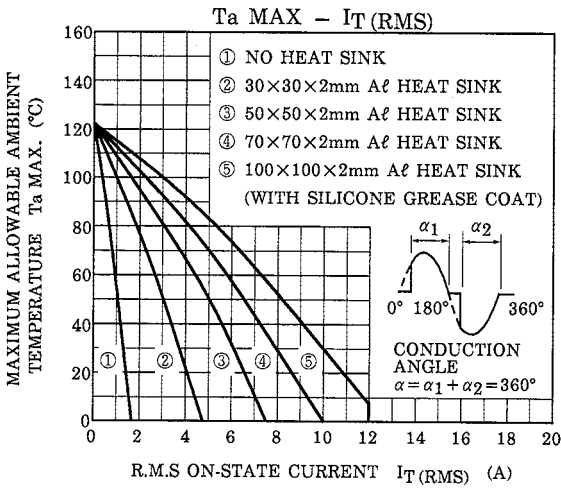
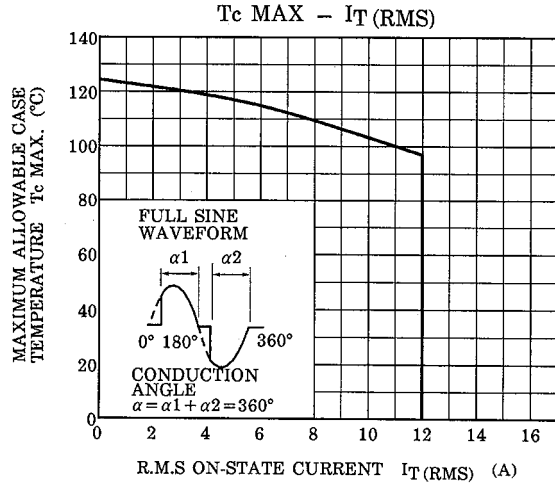
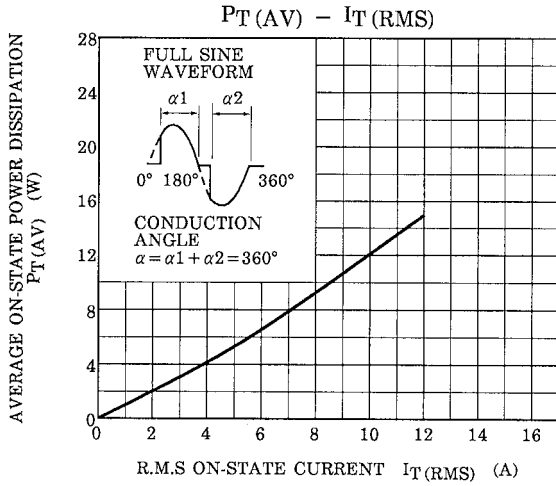
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT		
Repetitive Peak Off-State Current		$I_{DRM}$	$V_{DRM} = \text{Rated}, T_j = 125^\circ\text{C}$	—	—	2	mA		
Gate Trigger Voltage	SM12G45 SM12J45	I	$V_D = 12\text{V}, R_L = 20\Omega$	T2 (+), Gate (+)	—	—	2	V	
		II			T2 (+), Gate (-)	—	—		2
		III			T2 (-), Gate (-)	—	—		2
		IV			T2 (-), Gate (+)	—	—		—
	SM12G45A SM12J45A	I			T2 (+), Gate (+)	—	—		1.5
		II			T2 (+), Gate (-)	—	—		1.5
		III			T2 (-), Gate (-)	—	—		1.5
		IV			T2 (-), Gate (+)	—	—		—
Gate Trigger Current	SM12G45 SM12J45	I	$V_D = 12\text{V}, R_L = 20\Omega$	T2 (+), Gate (+)	—	—	30	mA	
		II			T2 (+), Gate (-)	—	—		30
		III			T2 (-), Gate (-)	—	—		30
		IV			T2 (-), Gate (+)	—	—		—
	SM12G45A SM12J45A	I			T2 (+), Gate (+)	—	—		20
		II			T2 (+), Gate (-)	—	—		20
		III			T2 (-), Gate (-)	—	—		20
		IV			T2 (-), Gate (+)	—	—		—
Peak On-State Voltage		$V_{TM}$	$I_{TM} = 17\text{A}$	—	—	1.5	V		
Gate Non-Trigger Voltage		$V_{GD}$	$V_D = \text{Rated}, T_c = 125^\circ\text{C}$	0.2	—	—	V		
Holding Current		$I_H$	$V_D = 12\text{V}, I_{TM} = 1\text{A}$	—	—	50	mA		
Thermal Resistance		$R_{th(j-c)}$	Junction to Case, AC	—	—	1.8	$^\circ\text{C} / \text{W}$		
Critical Rate of Rise of Off-State Voltage at Commutation	SM12G45 SM12J45	$(dv / dt)_c$	$V_{DRM} = 400\text{V}$ $(di / dt)_c = -6.5\text{A} / \text{ms}$	10	—	—	V / $\mu\text{s}$		
	SM12G45A SM12J45A			4	—	—			

## MARKING



NUMBER	SYMBOL	MARK
*1	TYPE	SM12G45, SM12G45A
		SM12J45, SM12J45A
*2	SM12G45A, SM12J45A	A
*3	<p>Lot Number</p> <p>Month (Starting from Alphabet A)</p> <p>Year (Last Decimal Digit of the Current Year)</p>	<p>Example</p> <p>8A : January 1998</p> <p>8B : February 1998</p> <p>8L : December 1998</p>





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